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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of	)	
1998 Biennial Regulatory Review -- Modifications to Signal Power Limitations Contained in Part 68 Of the Commission's Rules	)	CC Docket No. 98-163

COMMENTS OF NORTHERN TELECOM INC.

Northern Telecom Inc. ("Nortel Networks") hereby responds to questions raised in the Notice of Proposed Rulemaking regarding modifications to the signal power limitations contained in Part 68 of the Commission's Rules for Pulse Code Modulation ("PCM") modems operating over the Public Switched Telecommunications Network ("PSTN").[1] In particular, the Commission proposes to increase the power limit on encoded analog content specified in sections 68.308(h)(1)(iv) and 68.308(h)(2)(v) from –12 dBm to –6 dBm. As explained below, Nortel Networks does not believe that the proposed change will have an adverse effect on the other basic and advanced services offered over the PSTN.

Nortel Networks is interested in the Commission's proposal primarily from the perspective of a manufacturer of xDSL equipment with regard to the potential impact of the proposed Part 68 changes on the telecommunications network. Nortel Networks is the leading

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[1] *1998 Biennial Regulatory Review -- Modifications to Signal Power Limitations Contained in Part 68 Of the Commission's Rules*, CC Docket No. 98-163, FCC 98-221, released September 16, 1998 (hereafter cited as "*Notice*").

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global supplier, in more than 100 countries, of digital telecommunications systems to businesses, universities, local, state and federal governments, the telecommunications industry, and other institutions. The company employs more than 30,000 people in the United States in manufacturing plants, research and development centers, and in marketing, sales and service offices across the country.

(1) xDSL Impact Should be Negligible

The *Notice* (at ¶ 8) seeks comment on the potential detrimental effects of the proposed power increases on xDSL services (which would include Asymmetric Digital Subscriber Line ("ADSL"), Nortel Networks' 1-Meg Modem[2] and other systems) in terms of additional signal interference, cross-talk, or other network detriment. Although it has not conducted specific testing of the proposal, it is Nortel Networks' assessment that the proposed increased power levels will not result in increased cross-talk interference into xDSL systems at frequencies above the voice band, because no change is proposed for out-of-band metallic or longitudinal voltage limits.

(2) The Absence of Voice Band Cross-talk Interference Should be Validated by Committee T1A1.7's Test Plan

The *Notice* (at ¶ 8) also seeks comment on the potential for increased problems of cross-talk in the voice band as a result of the increase in power that would be permitted under the

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[2] One of Nortel Network's xDSL products is its 1-Meg Modem, a high-speed asymmetrical digital offering that was designed to take advantage of the enormous investment that has been made in the existing copper local loop. 1-Meg Modem provides the means for delivering advanced services by enabling a dedicated data connection of up to 1.28 Mb/s downstream capability to the end user and up to 320 Kb/s upstream from the end user concurrent with voice service, over the existing copper loop. The 1-Meg Modem is available for large-scale deployment today. At the subscriber premises, 1-Meg Modem uses a simple "plug-and-play" digital replacement for analog modem technology, and thus provides fast and reliable access to the Internet with no rewiring in the home and no need for a subscriber service call. At the telephone company office, 1-Meg Modem utilizes a DSL card attached to the switch without the need for a separate DSLAM.

Commission's proposal. The issue is whether the -6 dBm voice band signal when fed into an analog subscriber loop from the decoder at the ISP subscriber's home central office will cause significant cross-talk interference. Here too, Nortel Networks believes that this level of signal in the voice band will not cause objectionable cross-talk.

This issue is also being examined presently by the industry in connection with the standards-setting process. Committee T1A1.7 has proposed a test plan to verify the ability of the loop plant to tolerate such an increase in power. Nortel Networks anticipates that this part of the standards-setting process will confirm the absence of an increased risk of cross-talk as a result of a 6 dB increase in voice band power limits.

(3) Impact on Digital Switching Line Cards Should be Negligible

The *Notice* (at n. 22) seeks comment on the extent to which the proposed increase in power might affect central office components such as line cards. Nortel Networks anticipates no problems to the line cards resulting from the proposed increase in power, at least with respect to Nortel Networks' DMS switches.

Nortel Networks has examined the impact on the line cards from higher power operations in the voice band (at levels greater than the proposed –6 dBm) and observed no adverse effects on the DSL cards from such higher power transmissions.

(4) DTMF Signaling Comparison

It should be noted that during call setup or while a telephony subscriber is keying in digits to control DTMF-driven services, DTMF tone levels may approach +1 dBm. Even for loops with loss, DTMF levels may often be higher than the proposed revised modem levels. Line cards, including those for xDSL that Nortel Networks manufactures, are designed to accommodate these levels.

(5) LADC Facilities Accommodate Even Higher Power Levels

Section 68.308(f)(1)(ii) specifies voice band power limits for Local Area Data Channel (LADC) interface equipment. LADCs are private line metallic channels consisting of copper pairs which carry signals that are not meant to be carried over the PSTN. LADC facilities only terminate in a central office for cross-connection purposes and do not connect to the PSTN.

The maximum signal power levels that are permitted at voice band frequencies on LADCs are completely analogous to the maximum decoded analog levels that are produced by PCM modems. The present rules allow for a maximum voltage of -6 dBV.[3] Using a nominal loop resistance of 900 ohms, this translates into a power of -5.5 dBm. This power limit, which has been in Part 68 for well over 15 years, is higher than the –6 dBm proposed in the NPRM.

The fact that LADC facilities have been able to operate successfully at higher levels than those proposed for PCM modems reinforces Nortel Network's view that relaxation of the encoded analog content limit in the loop plant will not cause incremental harm to the network.

(6) Conclusion

Nortel Networks believes that the Commission can adopt the proposed increase in power without creating adverse effects on the PSTN. While the nominal increase in transmission speed (from 54 kb/s to 56 kb/s) made possible by such an increase in power may not appear significant, the power increase has the added benefit of increasing the robustness of the data transmissions. Nortel Networks thus supports the proposed increase in power, because the benefits will accrue

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[3] -6 dBV is the maximum root-mean-squared (rms) metallic voltage averaged over 100 milliseconds in the 100-Hz bands having center frequencies between 750 Hz and 3950 Hz.

without creating additional cross-talk problems or harming xDSL services or central office components such as line cards.

Respectfully Submitted,

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